Final General Management Plan/ Environmental Impact Statement May 2005

National Park Service
U.S. Department of the Interior

Crater Lake National Park
Oregon

Final
General Management Plan / Environmental Impact Statement

Crater Lake National Park
Klamath, Jackson, and Douglas Counties, Oregon

Crater Lake National Park was authorized by an act of Congress on May 22, 1902 (Public Law 32 Stat. 20). The last comprehensive management plan for the park was completed in 1977. Much has changed since 1977 — visitor use patterns and demographics have changed, there are new demands for various recreational experiences and activities, and 22,400 acres were added to the park. Each of these changes has implications for how visitors access and use the national park and the facilities needed to support those uses, how resources are managed, and how the National Park Service manages its operations. A new plan is needed.

This document examines four alternatives for managing the national park for the next 15 to 20 years. It also analyzes the impacts of implementing each of the alternatives. The "no-action" alternative, alternative 1 describes the existing conditions and trends of park management and serves as a basis for comparison in evaluating the other alternatives. The emphasis of alternative 2 would be on increased opportunities in recreational diversity and resource education. Under alternative 3 visitors would experience a greater range of natural and cultural resources through recreational opportunities and education. The focus of alternative 4 would be on preservation and restoration of natural processes. Alternative 2 is the National Park Service's preferred alternative.

Impacts resulting from the no- action alternative would be negligible to minor on natural resources, park operations, and concession operations, with no adverse impact on most cultural resources. Under alternative 2 there would generally be moderate to major beneficial impacts. Impacts from alternative 3 would be generally beneficial. Alternative 4 would offer moderate beneficial impacts to natural and cultural resources, with a moderate, adverse impact on visitor use.

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SUMMARY

The purpose of this *Final General Management Plan / Environmental Impact Statement* for Crater Lake National Park is to present a direction for resource preservation and visitor use and a basic foundation for decision making for the park for the next 15 to 20 years. The general management plan provides a comprehensive direction for managing resource activities, visitor activities, and development that would be appropriate at the park in the future.

An important element in determining the desired resource and visitor experience conditions for the park has been public participation. Many issues and concerns were identified by the general public and NPS staff as part of the initial planning efforts, and comments were solicited at public meetings, in planning newsletters, and on the internet.

Once public input was received the planning team identified four alternatives for managing the park —a no- action and three action alternatives, including the preferred alternative. The plan also analyzes and presents the environmental and socioeconomic impacts or consequences of implementing each of those alternatives — the environmental impact statement part of this document. A summary of the alternatives and the important impacts is given below.

ALTERNATIVE 1 – NO ACTION

Description

The no- action alternative represents continuation of the current management direction and approach at the park. It is a way of evaluating the proposed actions of the other three alternatives.

Under the no- action alternative, archeological and ethnographic resources in the park would continue to be surveyed, inventoried, and evaluated as National Park Service staff and funding permitted. Natural resource management protection, preservation, and restoration activities would also continue as staffing and funding allowed.

Existing buildings and facilities in the park would remain; some historic structures would be adaptively used. Munson Valley would continue to serve as the center of NPS administration, maintenance, and housing.

The existing road access and circulation system within the park would continue, and visitor recreational opportunities and interpretive programs in the park would continue.

Impacts

Impacts resulting from the no- action alternative would be negligible to minor on natural resources, park operations, and concession operations. Most cultural resources, archeological sites, cultural landscapes, ethnographic resources, or museum collections would have no adverse impacts. Rehabilitation of the superintendent's residence would result in minor adverse impacts due to some loss of historic fabric. However, adaptive use of the structure as a science and learning center would ensure its long- term preservation and therefore provide a moderate beneficial impact.

Visitor access, recreational and educational opportunities, and visitor facilities and services would remain relatively unchanged, and the park would continue

to be an important visitor attraction, contributing to the tourism industry in the region. However, potential increases in visitation over the life of the plan could impact the ability to access some areas of the park and enjoy those areas in relative solitude and tranquility.

ALTERNATIVE 2 (PREFERRED) – EMPHASIS ON INCREASED OPPORTUNITIES

Description

Management of the park would emphasize increased opportunities for recreational diversity and research and education. Most recreational opportunities would remain, but new opportunities along Rim Drive would allow visitors to directly experience the primary resource of Crater Lake in ways other than driving. Any new uses around the rim would be nonmotorized and low impact. Opportunities to experience the lake by hiking and biking in a quieter setting would be explored by experimental seasonal road closures of East Rim Drive. Other frontcountry opportunities, such as short trails and picnic areas, would be along the roadways. These new opportunities would provide transitional experiences between the developed areas (or transportations corridors) and the backcountry and also provide for enhanced interpretation, new research, and access to the backcountry. The Grayback Road would change from motorized use to a non paved trail for hikers, bicyclists, and stock use. Winter snowmobile and snowcoach access would remain along North Junction to the rim.

Research and educational opportunities would be enhanced. A new science and learning center would form the core of the new research. The park would expand and encourage partnerships with universities, scientists, and educational groups. The information gathered would be disseminated throughout the park to rangers, interpretive staff, and visitors. As a result, special in- depth tours would be available to interest groups such as birdwatchers or geology clubs.

As described under the no- action alternative, existing buildings and facilities in the park would remain, but some structures would be adaptively used.

Current and future needs for office and administrative space would be accommodated without additional construction. Administrative and other organizational functions, which are not by necessity park- based, would be moved to surrounding communities as demand for space within the park increased.

Parking and road congestion at the park would be managed by improving existing pullouts, parking areas, and overlooks. If, in the future, crowding conditions developed, shuttles and other alternative transportation systems would be used to solve the problems, rather than expanding road and parking capacities.

Impacts

This alternative increases visitor opportunities for recreation, education and interpretation, and access to park facilities and services, creating major beneficial impacts on the visitor experience.

Impacts on cultural resources, including the superintendent's house, would be the same as the no- action alternative, with the exception of museum collections, which would have minor to moderate, long- term benefits.

Greater emphasis on research, partnering, and visitor education would enhance the quality and quantity of resource information. The information gained would allow for better management of on-going resource programs and, therefore, would indirectly promote moderate beneficial effects on biotic communities. Resource management programs could result in some direct short- term adverse impacts, but would result in long- term beneficial impacts on some threatened and endangered species.

As in alternative 1, some benefits would result from reconfiguration of Rim Village and adaptive reuse of existing buildings. However, under alternative 2, increasing staffing and moving some functions out of the park to nearby communities would result in beneficial impacts on park operations and on the local economy. Although the impact regionally would be negligible, the park would continue to be an important visitor attraction and contribute to the tourism industry in the three-county region. Alternative 2 is the environmentally preferred alternative as evaluated according to the National Environmental Policy Act.

ALTERNATIVE 3 – EMPHASIS ON ENJOYMENT OF THE NATURAL ENVIRONMENT

Description

The emphasis of this alternative would be to allow visitors to experience a greater range of natural and cultural resources significant and unique to the park through recreational opportunities and education. A wider range of visitor experiences would reach out to greater diversity of visitor groups. Recreational programs, which would focus on minimizing impact, would provide the focus for interpretation and education.

Resources would be managed to permit recreation while protecting the resources. Opportunities for recreation would be viewed in a regional context, where the park could serve as a source of information for regional recreational opportunities. Winter access would be improved by grooming along North Junction Road. During the summer season use of a shuttle bus system would be explored.

Use of most current facilities would continue. Treatment of historic structures and cultural landscapes would be similar to the no- action alternative, although such resources could be affected by construction of additional trails, installation of new interpretive signs and other media, and expanded tour programs under alternative 3.

Adequate space in an onsite facility would be provided for the curation and storage of the park's museum collections .

Impacts

This alternative's emphasis on increasing the diversity of visitor experience would create major beneficial impacts on the visitor experience. The shift toward a diverse visitor program also would decrease the range of interpretive programs, resulting in a moderate adverse impact on those preferring interpretive programs over experience.

Impacts on cultural resources would be the same as alternative 2.

Actions resulting from this alternative would result in some adverse impacts on some threatened and endangered species or biotic communities.

As described under alternative 2, the reconfiguration of Rim Village, adaptive reuse of existing buildings, increased staffing, and moving some functions outside the park would result in beneficial impacts. The park also would continue to be an important visitor attraction and contribute to the tourism industry in the three- county region.

ALTERNATIVE 4 – EMPHASIS ON PRESERVATION AND RESTORATION OF NATURAL RESOURCES

Description

Park management would be focused on the preservation of native species and natural processes and the restoration of biodiversity and natural processes where altered. The park would be an active partner in a regional conservation strategy that would include other agencies and environmental groups. Most park operations and visitor contact facilities would be outside the park and shared with other agencies and communities.

Resource preservation and restoration would be the overriding consideration in the park. Areas that have been altered would be restored to their natural conditions. Cultural resources would be preserved at the highest level possible. Museum collections would be increased but would be stored in an offsite facility that met professional and National Park Service museum standards.

The visitor experience would stress activities that have low environmental impacts on and are harmonious with the resources. More emphasis would be place on self- guided and discover y education, and interpretive programs would focus on stewardship.

Vehicular transportation would be altered to reinforce the visitor experience. The Rim Road would be closed between Cleetwood Cove and Kerr Notch. Winter use of the park would change to allow natural processes to proceed with less disturbance than current management practices allow. Winter plowing of the road to the rim would stop, except for spring opening. Snowmobiling along North Junction Road would no longer be allowed.

Facilities that are not historic and not essential to park functions would be removed and the area rehabilitated. Functions that are, by necessity park-based, would be retained in the park.

Impacts

Impacts resulting from this alternative would include overall beneficial impacts to natural and cultural resources. The decrease in diversity of opportunities, accessibility, and number of interpretive programs would have a moderate adverse impact on the visitor experience.

A decrease in buildings and facilities in the park, along with reduced winter operations, would have moderate beneficial impacts on park operations. The addition of a shuttle and snowcoach would result in moderate, long- term, adverse impacts on concession operations.

Moving operations out of the park would have a beneficial impact on the local economy. Although the impact regionally would be negligible, the park would continue to be an important visitor attraction and contribute to the tourism industry in the three- county region.

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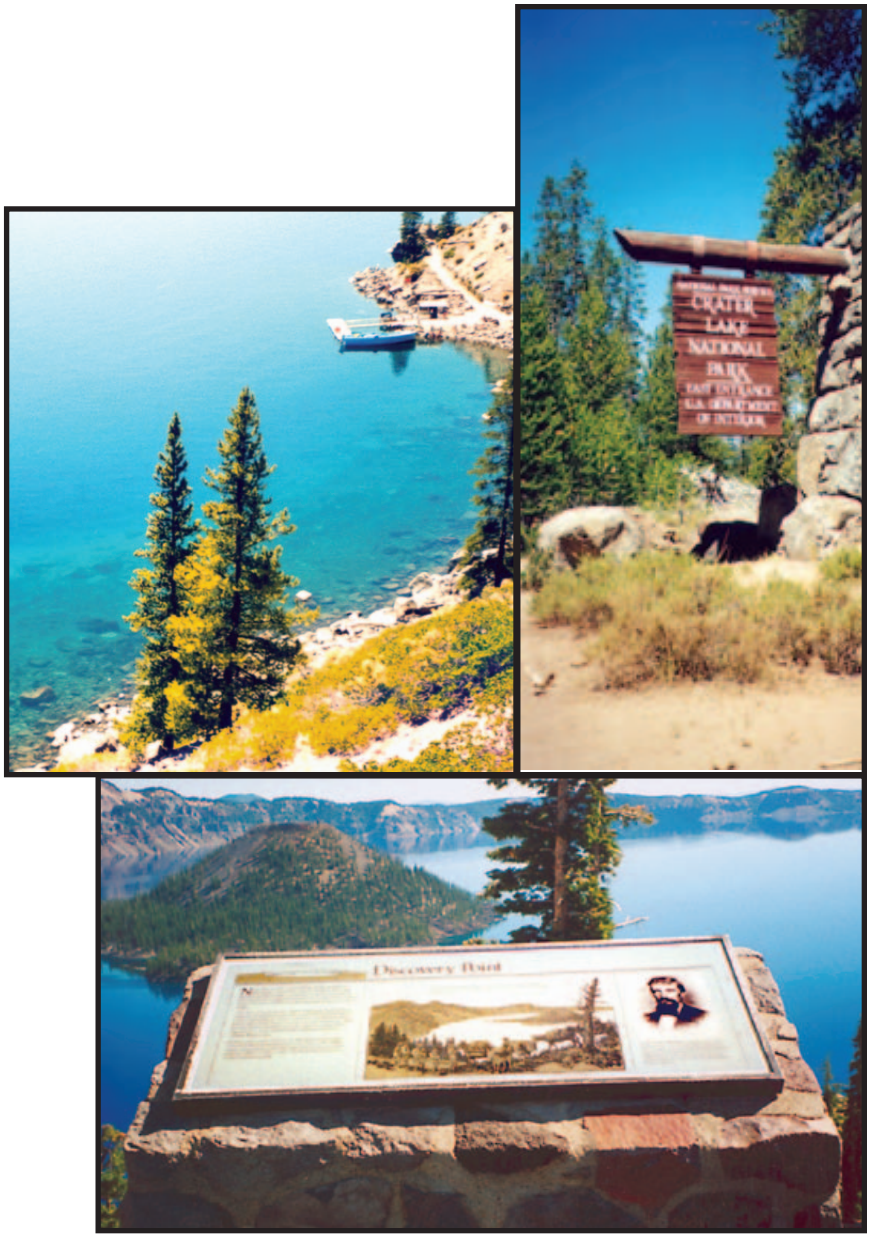


PURPOSE, NEED, AND SCOPING

INTRODUCTION

General management plans are intended to be long- term documents that establish and articulate a management philosophy and framework for decision making and problem solving in the parks. General management plans usually provide guidance during a 15- to 20- year period

This *Final General Management Plan / Environmental Impact Statement* presents four alternative future directions for the management and use of Crater Lake National Park. The plan also analyzes and presents the environmental and socioeconomic impacts or consequences of implementing each of those alternatives – the environmental impact statement part of the document. An important element in determining the future directions is public participation throughout the planning process. One of the alternatives, alternative 2, is the National Park Service's preferred alternative. The potential environmental impacts of all alternatives have been identified and assessed. Actions directed by general management plans or in subsequent implementation plans are accomplished over time. Budget restrictions, requirements for additional data or regulatory compliance, and competing national park system priorities prevent immediate implementation of many actions. Major or especially costly actions could be implemented 10 or more years into the future.

BRIEF DESCRIPTION OF THE PARK

Crater Lake National Park is in southwest Oregon in the south- central portion of the Cascade Range (see Vicinity map). The park ranges in elevation from about 3,800 feet in the southwest corner of the park to just over 8,900 feet at Mount Scott. The flora of Crater Lake National Park is typical of the vegetation found throughout the Southern Cascades. Generally, the vegetation reflects a mosaic of forested and open nonforested areas. Vegetation ranges from a mixed conifer forest dominated by ponderosa pine at the south to high elevation mountain hemlock and whitebark pine forest at the rim. The park is regarded by many as a sanctuary for native forest and meadow communities.

Near the center of the park is the park's most spectacular resource, Crater Lake. It is 1,943 feet deep, the deepest lake in the United States. The lake is in a caldera which was formed when the top of the 12,000- foot volcano erupted and collapsed. Over the centuries, the caldera has collected water from rain and snow to form the lake. It is about 5 miles in diameter and is surrounded by the jagged, steep- walled cliffs of the caldera left by the climatic eruption and collapse of Mt. Mazama about 7,700 years ago. The cliffs surrounding the lake rise from 500 to 2,000 feet above the lake's surface.

From the rimmed summit, the land slopes gradually downward in all directions. There are no inlets or outlets to the lake. Evaporation and seepage prevent the lake from becoming deeper. Due to the topography, Crater Lake has no influent or effluent streams to provide continuing supplies of oxygen, nutrients, and fresh water. Crater Lake is considered a youthful lake with a high level of purity. The purity can be attributed to the absence of inflowing streams introducing minerals and other debris. The lack of dissolved minerals greatly restricts the growth of

aquatic plants and the absence of sufficient carbonates inhibits the development of large shelled animals. The result is a high level of light penetration that exceeds other alpine lakes. Crater Lake holds the world record for clarity among lakes.

Visitors primarily come to Crater Lake National Park to view the lake. The inherit qualities of the lake and its setting provide breathtaking views from the rim of the caldera. The quality of the lake's water enables sunlight to penetrate and create the reknown blue coloration. The steep caldera wells and mirror- like reflections tinted in subtle shades. At times brilliantly blue; at other times buried in a mass of brooding clouds, Crater Lake has a mystic and inspiring quality.

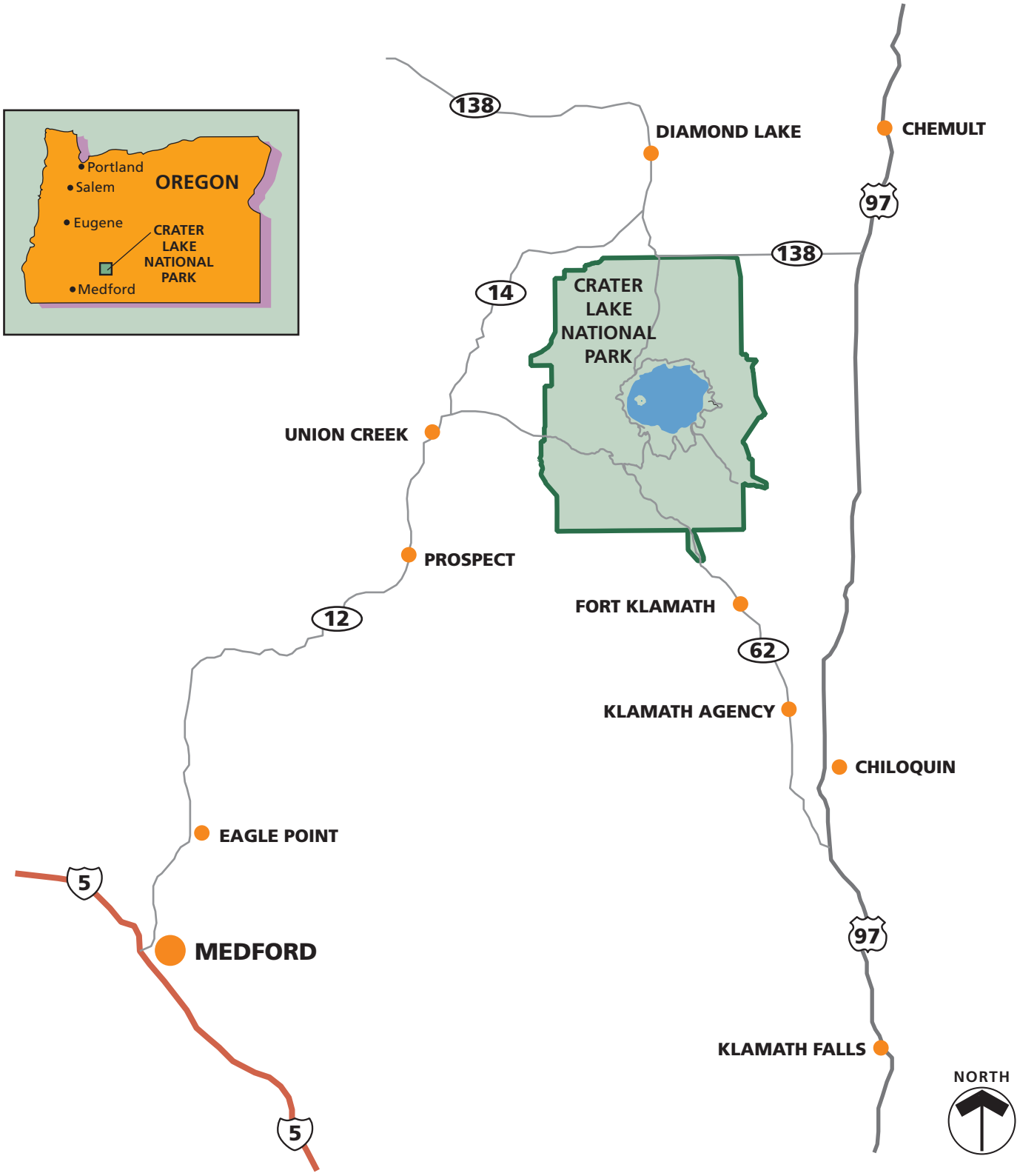
The park encompasses approximately 182,304 acres and is heavily forested, except for a number of treeless and pumice- covered flats. The topography ranges in elevation from about 3,800 feet in the southwest corner of the park to 8,900 feet at Mount Scott, which is the highest point in the park. Streams originating on the slopes of the caldera form headwaters of the Rogue River to the west or join the Klamath Basin to the south and east. Steep- walled canyons cut in pumice, such as at Annie, Castle, and Sun Creeks, contribute to the ruggedness of the terrain.

Some of the nation's best examples of blending rustic architecture and other built features within a national park setting can be seen in the park at Rim Village and at park headquarters in Munson Valley. This designed landscape was constructed over 15 years, beginning in 1926. Most of the features in these two areas are listed on the National Register of Historic Places. The Crater Lake superintendent's residence at Munson Valley was designated a national historic landmark (NHL) because it is an outstanding example of rustic architectural design.

Crater Lake National Park is a vital element in a diverse regional recreation complex. Many visitors stop at the park as part of a north- south trip to various parks and scenic areas in Oregon and northern California. In southern Oregon, Crater Lake has historically been the leading visitor draw.

The park's southern entrance station at Mazama Village is 76 miles from Medford and 56 miles from Klamath Falls and can be reached by Oregon State Route (OR) 62. During summer the park can also be reached from the north by OR 138. Both the south and north access roads lead to Rim Drive, a 33- mile roadway that circles the caldera rim. Pullouts along Rim Drive provide scenic lake views. Rim Drive is in the process of being nominated to the National Register of Historic Places and has been designated as part of an All-American Road (as are south Highway 62, Munson Valley Road, and the North Entrance Road). Winter access is maintained only from the south and west on OR 62 through the Munson Valley headquarters area and up to Rim Village. Road closures, particularly between headquarters and the rim, are common during the winter because of frequent snowstorms.

Rim Village, at an elevation of 7,100 feet on the south edge of the Crater Lake caldera, has functioned as a year- round operation since 1948, although services are limited in the winter. Summer interpretive activities are provided from a small visitor contact facility near the rim and at the Sinnott Memorial overlook. The Sinnott Memorial is 25 feet below the rim on a precipitous cliff overlooking the lake. It has architectural significance as an



Vicinity

Crater Lake National Park

United States Department of the Interior ■ National Park Service

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expression of park rustic style in which the use of materials and siting blends seamlessly into the rim of the caldera. The Sinnott Memorial offers visitors a spectacular view of Crater Lake and is an ideal place to interpret the lake and caldera. Seasonal hotel accommodations are available at Crater Lake Lodge. Food services, gift sales, a picnic area, geology talks (summer only), and interpretive exhibits are also available at Rim Village.

Mazama Village is about 7 miles south of Rim Village and is the primary overnight visitor use area in the summer. A campground, motel accommodations, a camper services store, shower and laundry facilities, a gas station, interpretive walks, and evening campfire programs are all available during the summer. The nearby Annie Spring entrance station is the first contact station where visitors arriving by way of OR 62 might encounter NPS staff during the summer.

Cleetwood is on the north shore of Crater Lake and is accessed from Rim Drive. It is about 6 miles east of the north junction where Rim Drive intersects the North Entrance Road. Cleetwood contains a parking area, a nonpermanent ticket sales structure, and a portable restroom at the rim. A trail descends the side of the caldera to the lake. The concessioner offers commercial boat tours of the lake, accompanied by NPS interpreters.

Park headquarters is about 3 miles south of Rim Village and serves as the center of NPS administration, maintenance, and housing. It also serves as the year- round visitor interpretation and orientation point. Park headquarters is in a historic complex of buildings at the central portion of the Munson Valley development area. Visitor information services and interpretive exhibits are provided in this complex at the visitor information center. Primary park administrative services are in the administration building. Storage and maintenance facilities are also in the park headquarters area.

PURPOSE AND NEED

The purpose of this *Final General Management Plan / Environmental Impact Statement* is to clearly define a direction for resource preservation and visitor experience at Crater Lake National Park over the next 15 to 20 years. The approved plan would provide a framework for proactive decision- making, including decisions on visitor use, natural and cultural resource management, park development, and addressing future opportunities and problems.

This document will not describe how particular programs or projects will be implemented or prioritized. Those decisions will be deferred to more detailed implementation planning, which will follow the broad, long- range decision making presented in this document.

The National Parks and Recreation Act of 1978 (PL 95- 625) requires the preparation and timely revision of general management plans for each unit of the national park system. The previous *Master Plan* for Crater Lake was approved in 1977. A number of subsequent planning efforts were initiated, each undertaken to enhance the visitor experience and resource protection at the developed areas of Crater Lake National Park. The park has implemented significant portions of the plans for specific developed areas. For example, Crater Lake Lodge has been rehabilitated and reopened in May 1995. A new dormitory for concession employees has been built near Mazama Village. This *General Management Plan* will provide an

opportunity to consolidate these past decisions that are spread throughout several documents into a single document. The *Final General Management Plan / Environmental Impact Statement* takes a new look at the management of the park based on the changes that have occurred since 1977 and current issues and concerns confronting the park, with the intent of building on the park's previous planning accomplishments. Visitor use patterns and demographics have changed, there are new demands for recreational experiences and activities, and 22,400 acres were added to the park. Each of these changes has implications for how visitors access and use the national park and the facilities needed to support those uses, how resources are managed, and how the National Park Service manages its operations.

THE SCOPING PROCESS

Public meetings and newsletters were used to keep the public informed and involved in the planning process for Crater Lake National Park. A mailing list was compiled that consisted of members of government agencies, nongovernmental groups, businesses, legislators, local governments, and interested citizens.

The notice of intent to prepare an environmental impact statement was published in the *Federal Register* on May 25, 2001. A newsletter issued January 2001 described the planning effort. Public meetings were held during April 2001 in Klamath Falls, Medford, Roseburg, and Salem and were attended by 96 people. A total of 72 written comments were received in response to that newsletter. A second newsletter issued in July 2001 summarized the comments received in the meetings and in response to newsletter 1. These comments were used to complete the park purpose and significance statements that serve as the foundation for the rest of the planning. Comments on various issues facing the park were referred to during development of the *General Management Plan*.

In spring of 2002 a total of 95 comments were received in response to a third newsletter describing draft alternative concepts and managing zoning. In general opinions were fairly divided in support of individual alternatives and how to address the issues. A number of letters favored continued snowmobile use while other people favored elimination of snowmobiles in the park. Opinions were divided on managing traffic along Rim Drive — maintaining current two- way traffic, converting part of the road to one- way traffic, or closing the road to traffic. Most respondents favored use of shuttles. A number of people who opposed partnering with private industry were concerned with large- scale commercialization within the park.

PLANNING DIRECTION AND GUIDANCE

PURPOSE, SIGNIFICANCE, MISSION, AND INTERPRETIVE THEMES

The purposes, significance, and mission goals of Crater Lake National Park are three of the key elements that shaped the development of the *General Management Plan*. These elements underlie how the park is managed. Park purpose statements are based on park legislation and legislative history, other special designations, and NPS policies. The statements reaffirm the reasons Crater Lake National Park was established as part of the national park system and provide the foundation for park management and use.

Significance statements identify the resources and values that are central to managing the area and express the importance of the park to our natural and cultural heritage. Understanding the park's significance helps managers make decisions that preserve the resources and values necessary to accomplish the area's purposes. Crater Lake's mission goals articulate the ideal future conditions the National Park Service is striving to attain. All of the alternatives and management prescriptions in this management plan are consistent with and support the park's purpose and significance statements and the park's mission.

Interpretive themes are the key stories or concepts that every visitor to the park should have the opportunity to learn. They include the ideas that are critical to a visitor's understanding of the park's purpose and significance. These themes provide the foundation for the park's interpretation and education programs and direction for interpretive media (e.g., exhibits, films, brochures, etc.) at the park.

Based on Crater Lake National Park's enabling legislation, legislative history, agency management policies, public input, and the knowledge and insights of park staff, the planning team identified the following purpose and significance statements, mission, and interpretive themes for Crater Lake National Park.

Park Purpose

The NPS Organic Act of 1916 directs that the fundamental purpose of all parks is "to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Crater Lake National Park was established in 1902, dedicated and set apart forever as a public park or pleasure ground for the benefit and enjoyment of the people of the United States. In managing this park, the Park Service was originally charged with "the protection and preservation of the game, fish, timber, and all other natural objects therein." In 1980, Congress updated the park purpose "to preserve for the benefit, education, and inspiration of the people of the United States certain unique and ancient volcanic features, including Crater Lake, together with significant forest and fish and wildlife resources" (Public Law 96- 553).

Park Significance

- Crater Lake is one of the most renowned lakes on earth, principally because of the beauty imparted by its large size, blue color, mountain setting, and ever-changing character.

- Crater Lake lies in a caldera that was left by the climactic eruption

and collapse of Mount Mazama more than 7,700 years ago. The circular lake, which formed in the caldera is considered by scientists to be a unique model for how small calderas evolve in geologic time. At a depth of 1,943 feet, Crater Lake is the 7th deepest lake in the world, and holds the world record for clarity among lakes.

- In addition to the lake, most of the forests that surround Crater Lake have never been logged and are largely preserved in their pristine condition. These mature forests harbor a variety of plant and animal life which are characteristic of higher elevations in the Cascade Range. Because extensive alteration of forestland has taken place elsewhere in the Cascade Range, some of these plants and animals are rare. Those forests within the park boundary add unique opportunities for solitary and wilderness experiences.

- Some of the nation's best examples of blending rustic architecture and other built features within a national park setting can be seen at Rim Village, park headquarters in Munson Valley, and along Rim Drive. Much of Rim Village, park headquarters, and Rim Drive are within districts listed on the National Register of Historic Places.

- Crater Lake is of enduring importance to contemporary members of American Indian tribes because of its centrality to long- standing cultural traditions and resource harvesting activities, as well as its symbolic significance as a sacred site. The park is part of a larger cultural landscape that extends well beyond park boundaries.

- Crater Lake has been the object of scientific study for more than a century, and is unique for the scientific research related to its pristine waters, associated geothermal activities, and unusual aquatic organisms.

- The unique natural and cultural resources of Crater Lake National Park provide exemplary opportunities for students and educators.

Mission

Crater Lake National Park's mission is

> *to forever preserve the beauty of Crater Lake National Park, its unique ecological and cultural heritage, and to foster understanding and appreciation through enjoyment, education, and inspiration*

Interpretive Themes

Cultural: Evidence left behind by a continuum of different land uses for thousands of years helps us imagine past human interaction with these resources and instills appreciation for the continuing challenge of balancing human use with preservation.

Research and Education: For more than 100 years, Crater Lake has been a landscape of exploration and discovery. Today scientists are studying the lake and surrounding resources to better understand natural systems and improve future management of the

national park and the quality of life in this country and the world.

Geology. Geologic processes, primarily vulcanism, that created the Crater Lake caldera and the Cascade Mountains provides important lessons about the evolution of our planet.

Plant / Animal Diversity. The Cascades ecosystem at and around Crater Lake National Park supports an extraordinarily rich biological diversity.

Recreation and Visitor Experience. The serenity and beauty of Crater Lake National Park offers its visitors a wide range of recreational activities and opportunities to experience natural beauty, quiet, solitude, reflection, and inspiration.

SERVICEWIDE LAWS AND POLICIES

As with all units of the National Park Service, the management of Crater Lake National Park is guided by a number of legal mandates and park policies in addition to the enabling legislation. These include the 1916 Organic Act (which created the National Park Service), the General Authorities Act of 1970, the act of March 27, 1978 (relating to the management of the national park system), and other applicable federal laws and regulations, such as the Endangered Species Act and the National Historic Preservation Act. The National Park Service has also established management policies for all units under its stewardship. These are identified and explained in *NPS Management Policies* (2001).

These legal mandates and policies prescribe many resource conditions and some aspects of the visitor experience. This plan is not needed to decide, for instance, whether or not it is appropriate to protect endangered species, control exotic species, protect archeological sites, or provide access for visitors with disabilities. Although attaining some of these conditions set forth in these laws and policies has been temporarily deferred in the park because of funding or staffing limitations, the National Park Service will continue to strive to implement these requirements with or without a new general management plan.

The conditions prescribed by laws, regulations, and policies most pertinent to the planning and management of the park are summarized below.

Natural Resources

Desired Condition	Source
Vegetation	
The preservation of the natural objects…the protection of the timber, and …the preservation of all kinds of game and fish.	Crater Lake National Park enabling legislation
The preservation of the park's unique ecological and cultural heritage	
NPS- managed natural systems, and the human influences upon them, will be monitored to detect any significant changes. Action will be taken in the case of such changes, based on the type and extent of change.	NPS *Management Policies*
Maintain all the components and processes of naturally evolving park ecosystems.	
The National Park Service will re- establish natural functions and processes in human- disturbed natural systems in parks unless otherwise directed by Congress.	
The Park Service will, within park boundaries, identify, conserve, and attempt to recover all federally listed threatened, endangered, or special- concern species and their essential habitats. As necessary, the Service will control visitor access to and use of essential habitats, and may close such areas to entry for other than official purposes. Active management programs (such as monitoring, surveying populations, restorations, exotic species control) will be conducted as necessary to perpetuate, to the extent possible, the natural distribution and abundance of threatened or endangered species, and the ecosystems upon which they depend.	Endangered Species Act (16 USC 1531, et seq.); NPS *Management Policies*
The Park Service will identify all state and locally listed threatened, endangered, rare, declining, sensitive, or special concern species and their essential habitats that are native to and present in the parks. These species and their essential habitats will be considered in NPS planning and management activities.	NPS *Management Policies*
Plant and animal species considered to be rare or unique to a park will be identified, and their distributions within the park will be mapped.	
Management of populations of exotic plant and animal species, up to and including eradication, will be undertaken whenever such species threaten park resources or public health and wherever control is prudent and feasible.	
Revegetation efforts will use seeds, cuttings, or transplants representing species and gene pools native to the ecological portion of the park in which the restoration project is occurring.	
Water Resources and Aquatic Ecosystems	
Surface and ground waters are restored or enhanced; water quality meets as a minimum the standard for contact recreation.	Clean Water Act; Executive order 11514; NPS *Management Policies*
NPS and NPS- permitted programs and facilities are maintained and operated to avoid pollution of surface and ground waters	Clean Water Act; Executive Order 12088; NPS *Management Policies*

Desired Condition	Source
Natural floodplain values are preserved or restored.	Executive order 11988; Rivers and Harbors Act; Clean Water Act; NPS *Management Policies;* Director's Order 77- *1*
The natural and beneficial values of wetlands are preserved and enhanced.	Executive order 11990; Rivers and Harbors Act; Clean Water Act; NPS *Management Policies;* Director's Order 77- 2
Protection of stream features will primarily be accomplished by avoiding impacts to watershed and riparian vegetation, and by allowing natural fluvial processes to proceed unimpeded.	NPS *Management Policies*
Wildlife	
Federal- and state- listed threatened and endangered species and their habitat are sustained.	Endangered Species Act; NPS *Management Policies*
Populations of native plant and animal species function in as natural condition as possible except where special management considerations are warranted.	NPS *Management Policies*
Native species populations that have been severally reduced or extirpated from the park are restored where feasible and sustainable.	
Management of populations of exotic plant and animal species, up to and including eradication, will be undertaken whenever such species threaten park resources or public health and when control is prudent and feasible.	
Air Resources, Soundscapes, and Lightscapes	
Air quality in the parks meets national ambient air quality standards (NAAQS) for specified pollutants. Park activities do not contribute to deterioration in air quality.	Clean Air Act; NPS *Management Policies*
The National Park Service will preserve the natural ambient soundscapes of parks, which exist in the absence of human- caused sound.	NPS *Management Policies*
The Park Service will protect natural darkness and other components of the natural lightscape in parks.	NPS *Management Policies*
Geological, Soils, and Paleontological Resources	
Management of significant thermal features, including assessment, monitoring, data collection and protection from significant adverse effects due to geothermal development.	Geothermal Steam Act Amendment of 1988
Natural geologic processes proceed unimpeded.	NPS *Management Policies*
Paleontological resources, including both organic and mineralized remains in body or trace form, will be protected, preserved, and managed for public education , interpretation, and scientific research.	
Natural soil resources and processes function in as natural condition as possible, except where special management considerations are allowable under policy.	
The Park Service will actively seek to understand and preserve the soil resources of parks, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.	

Research, Resource Inventory and Monitoring	
Management of the resources will be enhanced by the availability and utilization of a broad program of the highest quality science and research. The Park Service will undertake a program of inventory and monitoring to provide baseline and long- term trends in the condition of resources. The Park Service will encourage publication and dissemination of information derived from studies.	National Park Omnibus Management Act of 1998, Title II National Park System Resource Inventory and Management
Wilderness	
The Park Service seeks to retain wilderness potential in areas proposed as wilderness until enacted or rejected. The administration of wilderness meets the standards within the Wilderness Act: Protection of these areas in an unimpaired state for future use and enjoyment as wilderness Preservation of the wilderness character of these areas	NPS *Management Policies* ; Wilderness Act of 1964; Director's Order #41
Wilderness is protected and managed so as to preserve its natural conditions and which • generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable. • has outstanding opportunities for solitude or a primitive and unconfined type of recreation.	Wilderness Act of 1964; Director's Order #41
Fire Management	
Each park is required to have a fire management plan / environmental assessment that addresses wildland and prescribed fires. Wildland fires are naturally ignited and part of natural systems that are being sustained by parks. Prescribed fires are human ignited to achieve resource management or fuel treatment objectives.	NPS *Management Policies; Director's Order #18*
Fire suppression within proposed wilderness will be consistent with the "minimum requirement" concept. (minimum tool or administrative practice to successfully and safely accomplish the objective with the least adverse impact on wilderness character or values)	

Cultural Resources

Desired Condition	Source
Prehistoric and Historic Archeological Sites	
Archeological sites are identified and inventoried, and their significance is determined and documented.	National Historic Preservation Act
Archeological sites are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable.	Archeological and Historic Preservation Act Archeological Resources Protection Act
In cases where disturbance or deterioration is unavoidable, the site is professionally documented and salvaged.	*Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (1992) Programmatic Memorandum of Agreement among the National Park Service, Advisory Council on Historic Preservation, and national Council of State Historic Preservation Officers (1995) NPS *Management Policies*
Historic Structures and Cultural Landscapes	
Historic structures and cultural landscapes are inventoried and their significance and integrity are evaluated under national register criteria.	National Historic Preservation Act Archeological and Historic Preservation Act
The qualities of historic structures and cultural landscapes that contribute to their actual listing or their eligibility for listing on the National Register of Historic Places are protected in accordance with the *Secretary of the Interior's Standards*, unless it is determined through a formal process that disturbance or natural deterioration is unavoidable.	*Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (1992) Programmatic Memorandum of Agreement among the National Park Service, Advisory Council on Historic Preservation, and national Council of State Historic Preservation Officers (1995) NPS *Management Policies*
Objects and Archival Manuscripts Collections	
Manage parks to provide for the protection of historic, prehistoric, and scientific features.	The Antiquities Act of 1906.
Manage parks to "maintain historic or prehistoric sites, buildings, objects, and properties of national historical or archaeological significance and… establish and maintain museums in connection therewith."	The Historic Sites Act of 1935.
All museum objects and manuscripts are identified and inventoried, and their significance is determined and documented. The qualities that contribute to the significance of collections are protected in accordance with established standards. Ensure that objects housed in repositories/institutions outside the park are preserved, protected, and documented according to NPS standards and guidelines.	American Indian Religious Freedom Act Archeological Resources Protection Act Native American Graves Protection and Repatriation Act NPS *Management Policies* NPS *Museum Handbook* *Director's Order* #24
Ethnographic Resources	
Manage parks to provide for the protection of historic, prehistoric and scientific features.	Antiquities Act of 1906

Desired Condition	Source
Continue to recognize the past and present existence of peoples in the region and the traces of their use as an important part of the cultural environment to be preserved and interpreted. Consult with associated American Indian tribes to develop and accomplish the programs of Crater Lake National Park in a way that respects the beliefs, traditions, and other cultural values of the American Indians who have ancestral ties to park lands. Accommodate access to and ceremonial use of traditional use areas in a manner that is consistent with park purposes and avoid adversely affecting the physical integrity of these sites and resources. American Indians linked by ties of kinship or culture to ethnically identifiable human remains would be consulted when remains may be disturbed or are encountered on park lands.	American Indian Religious Freedom Act (1978 and as amended in 1994) Native American Graves Protection and Repatriation Act (1990) Presidential Memorandum of April 29, 1994, Government- to- Government Relations With Native American Tribal Governments Executive Order 13007 of May 24, 1996, Indian Sacred Sites

Visitor Management Requirements

Desired Condition	Source
Visitor Experience and Park Use Requirements	
Visitor and employee safety and health are protected.	NPS *Management Policies*
Visitors understand and appreciate park values and resources and have the information necessary to adapt to the park environments. Visitors have opportunities to enjoy the park in ways that leave park resources unimpaired for future generations.	NPS Organic Act Crater Lake National Park enabling legislation NPS *Management Policies*
Park recreational uses are promoted and regulated. Basic visitor needs are met in keeping with park purposes.	NPS Organic Act Title 36 of the Code of Federal Regulations NPS *Management Policies*
New and remodeled buildings, outdoor developed areas, and features are accessible to all visitors, including those with disabilities, in compliance with federal standards. However, it may not be possible to make all sites or historic buildings accessible because the required changes would affect the integrity of the feature or the historic structure. In these cases interpretive brochures or programs could help convey an experience to visitors.	Americans with Disabilities Act Architectural Barriers Act Rehabilitation Act NPS *Management Policies*

Development and Sustainability

Desired Condition	Source
New and remodeled buildings and facilities reflect the NPS commitment to energy and resource conservation, as well as durability.	Executive Order 12873 Executive Order 12902 Guiding Principles of Sustainable Design (NPS 1993)

SPECIAL MANDATES AND ADMINISTRATIVE COMMITMENTS

Special mandates and administrative commitments refer to park- specific requirements. Those most directly related to the *General Management Plan* or that may potentially affect it are listed below.

Proposed Wilderness

The Wilderness Act of 1964 "established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as 'wilderness areas,' and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness." The 1974 National Park Service wilderness proposal recommended wilderness designation for approximately 122,400 acres of lands within the park. This recommendation was transmitted to Congress by the president.

The legislative process has not been completed for the Crater Lake National Park Wilderness Designation proposal. However, it is the policy of the National Park Service (2001 NPS *Management Policies*, Chapter 6: Wilderness Preservation and Management) to "take no action that would diminish the wilderness suitability of an area possessing wilderness characteristics until the legislative process has been completed. Until that time, management decisions pertaining to lands qualifying as wilderness will be made in expectation of eventual wilderness designation. This policy also applies to potential wilderness, requiring it to be managed as wilderness…"

Among other mandates are the protection of wilderness areas and the preservation of their wilderness character. Wilderness characteristics are defined in the Wilderness Act as:

- The earth and its community of life are untrammeled by humans, where humans are visitors and do not remain.
- The area is undeveloped and retains its primeval character and influence, without permanent improvements or human habitation.
- The area generally appears to have been affected primarily by the forces of nature, with the imprint of humans' work substantially unnoticeable.
- The area is protected and managed so as to preserve its natural conditions.
- The area offers outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Threatened and Endangered Species Management

The federal Endangered Species Act and NPS policy provide special protection to all federally listed and threatened and endangered species. Species appearing on state lists of endangered, threatened, and special concern are also considered in planning and management activities. The park supports and provides habitat for a number of federal or state listed species. The Park Service would continue to prepare and periodically update specific management plans and programs (e.g., fire management plan; bull trout restoration program; threatened and endangered species inventory, monitoring, and research programs). These initiatives are directed by servicewide laws and policies,

and the *General Management Plan* will not explore alternatives to these plans and programs. Nothing in this *General Management Plan* would conflict with these initiatives.

Although these plans and programs would benefit threatened and endangered species and their habitat within the park, it should be noted that some adverse effects, including "taking" of individuals, such as loss of some individual fish during bull trout restoration operations, have and would likely continue to occur. The Park Service would continue to consult the U.S. Fish and Wildlife Service as these plans and programs are prepared and updated to ensure the conservation of these species. While these beneficial and adverse effects would not result from the implementation of any of the *General Management Plan* alternatives, they are considered in the cumulative impacts analysis (see "Environmental Consequences, Cumulative Impacts" section).

Research and Monitoring

The Crater Lake Long- Term Limnological Monitoring Program (LTLMP) began with a congressionally mandated (Public Law 97- 250) 10- year study (1982 - 1992). The 10- year program was established to determine whether the lake was undergoing what appeared to be a long- term decline in water clarity. The National Park Service did not have an adequate limnological data base to interpret the apparent changes in clarity for managing this nationally and internationally treasured resource. During the 10- year program scientists and park managers built a high quality limnology program. The program documented that the lake clarity was within normal inter-annual variation, it also provided valuable data and recommendations on a number of other management issues.

In 1994 the National Park Service received Congressional funding to continue a long-term monitoring program as part of park base operations. The purpose of the long-term program is to develop a limnological database to evaluate long- term trends; to develop an understanding of the interrelationships among ecosystem components to evaluate change, and; to contribute to the preservation and management of Crater Lake, and other international aquatic resources through publication of peer reviewed program results.

Title II – National Park System Resources Inventory and Management of the National Parks Omnibus Management Act of 1998 had the following purposes:

- More effectively achieve the mission of the National Park Service
- Enhance management and protection of park resources by providing clear authority and direction for scientific study
- Ensure appropriate documentation of resource conditions
- Encourage use of the national park system for the benefit of park management as well as broader scientific value
- Encourage the publication and dissemination of information derived from studies in the national park system

The act directs that management of park units is enhanced by the highest quality science and information. It further establishes a program of inventory and monitoring resources to establish baseline information and provide information on

the long- term trends in the conditions of national park resources.

Klamath Basin General Stream Adjudication

The State of Oregon, Klamath Basin General Stream Adjudication, is currently active and includes Crater Lake National Park. The adjudication is a legal process that will determine the quantities and relative priorities associated with the park's use of water from Crater Lake and the streams flowing within the park. The United States of America, National Park Service, has filed twenty- one federal reserved water rights claims (Claim Nos. 591 – 611) on behalf of Crater Lake National Park for instream, lake level, and out- of- stream uses. On August 2, 2001, the hearing officer ordered Claim Nos. 591 – 601, for instream and lake level uses, referred back to the adjudicator for final disposition. On February 28, 2002, the hearing officer signed a Final Proposed Order and recommended that the Adjudicator enter a Final Order for Claim Nos. 602 – 611, for out- of- stream uses. Final adjudication of the park's federal reserved water rights claims will occur when the claims of the other federal agencies included in the adjudication are settled. Acquisition of the federal reserved water rights would not eliminate the risk of Crater Lake's administrative uses being called out by downstream senior water rights holders during dry years. The National Park Service is negotiating with local water users for senior water rights that would augment the park's federal reserved water rights during dry years.

Visitor Services Plan

Klamath Falls, Medford, and Roseburg are the gateways to Crater Lake National Park providing the primary business, transportation, and service centers in their respective counties. Klamath Falls is the closest of these, located 50 miles south of the park. A number of smaller unincorporated communities — Beaver Marsh, Diamond Lake, Fort Klamath, Prospect and Union Creek — are much closer to the park. These provide some visitor services, not all of which are year-round.

Overall guidance for actions at the major developed areas is provided as part of the 1999 *Crater Lake National Park Visitor Services Plan*. The plan is a blend of actions intended to improve the protection of park resources while providing enjoyable visitor experiences. The *Visitor Services Plan* analyzed the appropriate level and location of interpretive and visitor services in the park, considering both National Park Service and commercial services. It stated that NPS interpretive services would be emphasized. Commercial services, considered to be necessary and appropriate due to the park's distance from sizable communities, would be modified to better serve visitors.

The *Visitor Services Plan* identifies the appropriate and necessary levels and kinds of NPS and concession services desired at Rim Village as well as the other major developed areas within the park. This *General Management Plan* builds on the previous planning effort. Elements of the *Visitor Services Plan* include the following:

Rim Village

- Rehabilitate historic cafeteria building
- Relocate parking and road to area behind cafeteria building
- Convert existing parking lot to pedestrian open space

- Construct new visitor contact station for year- round information and interpretation
- Remove Rim Village dormitory

Mazama Village
- Retain Mazama Village Motor Inn
- Construct new restaurant and expand parking lot
- Remove public laundries
- Increase space for sale of gift and sundry items and camping supplies
- Retain gasoline sales
- Retain limited food service
- Retain public showers
- Retain amphitheater
- Develop two group campsites
- Construct concession maintenance facility

Munson Valley
- Retain park administration, maintenance and housing facilities
- Provide interpretive services
- Provide backup of winter visitor contact station and post office

Cleetwood Cove
- Rehabilitate Trail and add wayside exhibits
- Replace dock and improve bulkhead
- Construct seasonal shade structure
- Construct storage structure for supplies and equipment
- Retain vault toilets
- Define trail entry and crosswalk

PLANNING ISSUES

INTRODUCTION

The general public, NPS staff, and other agencies and organizations identified issues and concerns during scoping for this *General Management Plan* (see "Scoping Issues" in the "Purpose, Need, and Scoping" section). Resource protection, visitor expectations, tolerance for greater crowding, the amount of park resources devoted to snowplowing, and the current limitations on staff and budget to provide interpretive presentations and outreach activities were the starting point of issues for this *General Management Plan*. Comments received during scoping demonstrated that snowmobile use, boundary enlargement, impacts on surrounding communities and the region, and use were important to visitors, organization, and other agencies.

This *General Management Plan* provides a framework or strategy for addressing the issues within the context of Crater National Park's mission, purpose, and significance goals; it also proposes resource conditions for summer and winter use on the land within the park boundary and desired visitor experiences.

ISSUES

A variety of issues that the National Park Service currently faces were identified. The issues were identified and refined through discussions with park staff, interested agencies and organizations, and the general public.

Some of the issues, such as modifying fees, are outside the scope of this plan. Some concerns identified during the planning process are already prescribed by law, regulation, or policy and were addressed in the preceding section, "Servicewide Laws and Policies." The key issues addressed in this plan are identified below along with the underlying questions and concerns identified during scoping.

Resource Protection: To what extent can visitor uses and visitor, administrative, and support facilities be provided while protecting natural and cultural resources?

- Should historic structures in the park be adapted for administrative use or educational or interpretive purposes?
- Is the park adequately addressing the potential resource protection concerns associated with visitor use (e.g., disturbance to wildlife; trampling of soils and vegetation; the effects of vehicle emissions on air and water quality), including winter use within the park?
- To what extent can visitor opportunities be provided without adverse impacts to resources?

Interpretation, Education, and Recreation: What is the appropriate balance between interpretation, education, and recreation within the park? What types of access are needed to support the appropriate mix of visitor experiences?

- Should the park expand its educational program and educational outreach? In what ways should this be done?
- Is the park providing an adequate range of visitor information services?
- Is the park currently providing an appropriate range of visitor experiences? Should the park consider increased bicycle, hiking, stock use, camping, and pedestrian access? Should any of these activities be decreased?

- Should alternative means of transportation be considered for visitor access at Crater Lake? If so, what type? Should parts of Rim Drive be closed to vehicular access to improve bicycle and pedestrian access?
- What types of winter access and use should be accommodated within the park? Should winter lake- viewing be limited? Expanded?

Partnerships: To what extent should the park partner with and support other agencies, organizations, and researchers to further common needs and fulfill the NPS mission?

- The clear waters of Crater Lake and the pristine surrounding forest areas in the park offer unique opportunities for scientific research and education. As a part of its mission, the park promotes and encourages research. Should the park emphasize and encourage research activities and partnerships that facilitate research and learning?
- Staff and budget levels limit onsite interpretive presentations and outreach activities. Should the park develop and expand its partnerships with other agencies or commercial operators to enhance orientation and education opportunities?

Park Operations: To what extent should park facilities and operations be maintained, expanded, or relocated to provide for park operational needs and efficiencies?

- Existing facilities have inadequate space for administrative and support functions. They lack adequate employee workspace and collections storage. Should these functions remain in the park or be relocated outside the park?
- A substantial portion of park resources is devoted to plowing the road to the Rim Village each winter. Are there other ways to accommodate winter lake- viewing?

IMPACT TOPICS – RESOURCES AND VALUES AT STAKE IN THE PLANNING PROCESS

IMPACTS TOPICS

Impact topics allow comparison of the environmental consequences of implementing each alternative. These impact topics were identified based on federal laws and other legal requirements, NPS subject- matter expertise and knowledge of limited or easily impacted resources, and concerns expressed by other agencies or members of the public during scoping. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration.

To focus the environmental impact analysis, and to ensure that the alternatives were evaluated against relevant topics, the planning team selected the following specific impact topics for further analysis and eliminated others from evaluation. These topics are described in the subsequent "Affected Environment" section and analyzed in the "Environmental Consequences" section.

Cultural Resources

Cultural resource impact topics were selected on the basis of major values identified in the park's enabling legislation, values identified in the scoping process, and applicable laws and executive orders pertaining to cultural resources (e.g., the 1966 National Historic Preservation Act and the National Environmental Policy Act). The topics are archeological resources, historic buildings/structures, cultural landscapes, ethnographic resources, and museum collections.

Natural Resources

Natural resource impact topics were selected for analysis based on the major values identified in the park's enabling legislation, values or issues identified in the planning process, NPS knowledge of limited or easily impacted resources, as well as applicable laws and regulations (e.g., Endangered Species Act of 1973, as amended, and NPS *Management Policies 2001*). The topics are biotic communities (includes the interrelated components of vegetation, wildlife and their habitat, and soils), threatened, endangered, and sensitive species (selected species), water resources, and air quality.

Visitor Use and Experience

The planning team identified visitor experience as an important issue that could be appreciably affected under the alternatives. The Organic Act and *NPS Management Policies 2001* both direct the Park Service to provide enjoyment opportunities for visitors that are uniquely suited and appropriate to the superlative resources found within the park. The different aspects of visitation and enjoyment that are evaluated include orientation, interpretation, education, soundscapes, scenic quality, and access and circulation

Park and Concession Operation

Actions proposed in the alternatives could adversely or beneficially affect both park and concession operations. For example, eliminating winter snow plowing to the rim and implementation of a snowcoach operation would affect operations for both the park and concessioner.

Socioeconomic Environment

The planning team selected the socio-economic environment as an impact topic because the park plays an important role in recreation in the region, which in turn contributes to the economy of the surrounding communities. Analyzing the regional economic impacts provides the context for evaluating the possible impacts the alternatives may have on the surrounding area.

IMPACT TOPICS ELIMINATED FROM FURTHER EVALUATION

The following topics were dismissed from further analysis because the alternatives being considered would have no discernable effect on the resource or topic, or the resource does not occur in the park.

Floodplains and Wetlands

Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands) require an examination of impacts to floodplains and wetlands, of potential risk involved in placing facilities within floodplains, and protecting wetlands. The 2001 NPS *Management Policies* , DO 77- 1 (*Wetland Protection*), DO 77- 2 (*Floodplain Management*), and DO- 12 (*Conservation Planning, Environmental Impact Analysis, and Decision Making*) provide direction for development proposed in floodplains and wetlands. It is NPS policy to avoid affecting floodplains and wetlands and to minimize impacts when they are unavoidable. Permanent streams in the park generally have steep- sided channels, and associated floodplains and riparian areas are narrow. The term wetlands include wet environments such as marshes, swamps, and bogs. They may be covered in shallow water most of the year, or be wet only seasonally. Plants and animals found in these areas are uniquely adapted to wet conditions. Crater Lake National Park wetlands include Sphagnum Bog, Thousand Springs, Boundary Springs, seeps, and creeks.

Facilities proposed for development under the alternatives would be sited to avoid floodplains and wetlands. Based on the prevalence of upland sites both within the park and nearby communities, it is expected that wetlands and floodplains would be avoided. Mitigation measures would be required as part of construction to minimize any potential indirect effects. For example, erosion control measures would be used to minimize siltation or sedimentation of nearby waters or wetlands from construction site runoff. Before initiating any ground- disturbing projects, further investigation would be conducted to ensure that these resources would not be appreciably affected. Floodplains and wetlands will be addressed at the project level to ensure that projects are consistent with NPS policy and EO 11988 and EO 11990, and any potential impacts would be negligible.

Ecologically Critical Areas, Wild and Scenic Rivers, or Other Unique Natural Resources

Four distinct natural areas within the boundaries of Crater Lake National Park have been designated as research natural areas: Sphagnum Bog, Llao Rock, Pumice Desert, and Desert Creek. These four areas illustrate unique ecosystems and represent outstanding habitats of the Oregon Cascades Province, as defined in the *Oregon Natural Heritage Plan* (1981).

Several other areas within the park contain important ecological communities. Boundary Springs is in the northwest

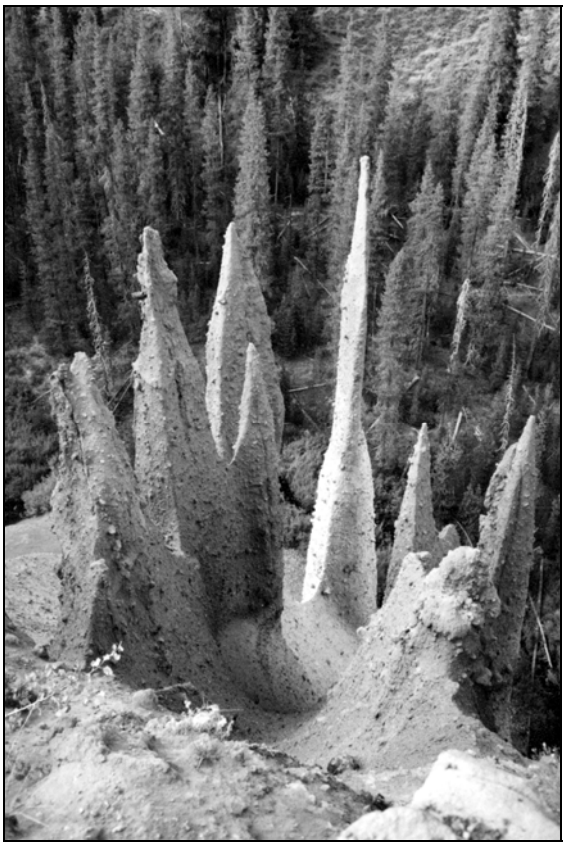
corner of the park and is one of the headwater sources of the Rogue River. The spring produces a reliable, year-round flow in an otherwise arid area, resulting in a lush moss and herb flora (Applegate 1939). Thousand Springs is approximately 1 mile south of the west entrance (OR 62) of Crater Lake National Park. The Thousand Springs site is a complex of freshwater springs that flow west into Union Creek and eventually into the Rogue River.

These research natural areas and important ecological communities would continue to be preserved and managed to minimize human disturbance under all of the alternatives. Negligible disturbance to these areas has occurred or is expected to occur under any of the alternatives.

No actions proposed in the alternatives would affect the eligibility or designation of a wild and scenic river.

Geologic Resources

Crater Lake National Park lies within a north- south chain of large volcanic cones built during the last few hundred thousand years along the crest of the Cascade Range (Schaffer 1983). The current landscape was formed after the eruption and collapse of Mt. Mazama. The park landscape displays a large range of volcanic rocks and remnant glacial material as well as a variety of geologic features. The steep-walled cliffs of the caldera left by the eruption of Mt. Mazama display the geologic layering of lava flows over time. Wizard Island is an example of a cinder cone and lava flows that erupted soon after the one which formed the caldera. Several more post caldera volcanoes are hidden by the lake. Studies of the lake bottom have shown the presence of hydrothermal activity on the lake floor. The Sand Creek/Pinnacles area in the



southeast corner of the park is a site of unique geological importance. The canyon formed by Sand Creek has sloping walls of scoria and pumice. Along the walls are numerous pinnacle formations, many 50 feet or taller.

No actions proposed in the alternatives would affect these geologic resources.

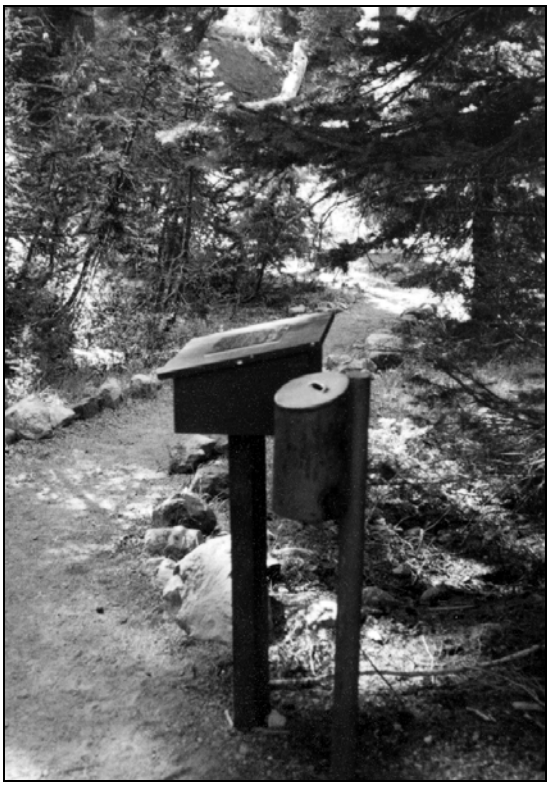
Threatened, Endangered, and Sensitive Species (Select Species)

There are a number of species that are considered threatened or endangered in Oregon, according to lists maintained by the U.S. Fish and Wildlife Service, Oregon Department of Agriculture, and the Oregon Natural Heritage Program (ONHP) that inhabit, or for which potential habitat exists in the park. The alternatives would have no effect on some of these species as discussed below. Surveys would be conducted and potential

new development or trails proposed under any of the alternatives would be sited to avoid disturbing sensitive species.

Lost River sucker (*Deltistes luxatus*) and shortnose sucker (*Chasmistes brevirostris*) are federal and state endangered species. Both species are primarily lake residents that spawn in rivers, streams, or springs associated with lake habitats. Wood River, which flows south of the park in the upper Klamath Lake watershed, provides spawning habitat for these species. Neither species is known to inhabit the park at present, and it is not known if they have historically inhabited the park. The alternatives would have negligible effects on water use from Annie Spring, which joins with the Wood River south of the park. There would be no measurable effect on Wood River flows; and, therefore, may affect, but would not be likely to adversely affect spawning habitat for these species would occur.

Yellow- billed cuckoo (*Coccyzus americanus*) is a federal candidate and listed by ONHP under species threatened or endangered or possibly extirpated from Oregon but secure elsewhere. Populations of this species have declined in portions of their range in the United States, particularly west of the Continental Divide. Western yellow- billed cuckoos appear to require large blocks of riparian habitat for nesting. Loss and degradation of western riparian habitats appears to be a primary factor in their decline. A survey in eastern Oregon and Klamath County located no birds but identified potential breeding habitat along the lower Owyhee River (Littlefield 1988). This species is not known to inhabit the park, nor would the alternatives adversely affect large blocks of riparian habitat. No effect on this species is anticipated under any of the alternatives.



Oregon spotted frog (*Rana pretiosa*) is a federal candidate and listed by ONHP under species threatened or endangered throughout their range. The tailed frog (*Ascaphcs truei*) and Cascade frog (*Rana cascadae*) are both federal species of concern and listed by the state under species threatened or endangered or possibly extirpated from Oregon but secure elsewhere. Spotted frogs are highly aquatic and live in or near permanent bodies of water, including lakes, ponds, slow streams and marshes. Tailed frogs are stream dwellers that do not inhabit ponds or lakes. The Cascade frog is found in small pools adjacent to streams flowing through subalpine meadows. They can also be found in sphagnum bogs and fens, seasonally- flooded, forested swamps, small lakes, ponds, and marshy areas adjacent to streams. These species are not known to inhabit the park, nor are the

alternatives expected to affect potentially suitable habitat.

Crater Lake newt (*Taricha granulosa* ssp. *mazamae*) is listed by ONHP under species threatened or endangered throughout their range. This species is endemic to Crater Lake and is found in the shoreline ecosystem of the lake. None of the actions within the alternatives would affect areas of known populations. The Park Service would continue to take management actions as necessary to avoid impacts from continuing visitor and research activities that occur within the caldera.

Mt. Mazama collomia, (*Collomia mazama)* is listed by the ONHP under taxa that are endangered or threatened throughout their range or which are presumed extinct. This species inhabits high elevation (4,800' - 6,300') forest- meadow ecotones in the red fir/mountain hemlock and lodgepole pine forest zones and occasionally along riparian areas. Within the park it is found north of Sphagnum Bog, along Pacific Crest Trail and Dutton Creek, and in scattered open woods and meadows of the lodgepole pine and true fir forest zones along the west side of park. None of the actions under the alternatives would affect areas of known populations within the park. The Park Service would continue to take management actions as necessary to avoid impacts by backcountry visitors. Crawford's sedge (*Carex crafordii*), abrupt- beaked sedge (*Carex abrupta*), and lesser bladderwort (*Utricularia minor)* are listed by the ONHP under species that are threatened, endangered, or possibly extirpated from Oregon, but are stable or more common elsewhere. These species occur within the park and are associated with wetlands and/or springs. The alternatives would not affect habitat where these species are found.

Prime and Unique Farmlands

In 1980 the Council on Environmental Quality (CEQ) directed that federal agencies assess the effects of their actions on farmland soils classified as prime or unique by the Natural Resources Conservation Service, U.S. Department of Agriculture. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. There are no prime or unique farmlands associated within the park, and this impact topic was dismissed from further analysis.

Lightscape

NPS *Management Policies* (2001) state that the National Park Service will preserve, to the greatest extent possible, the natural lightscapes of parks, including natural darkness. The agency strives to minimize the intrusion of artificial light into the night scene by limiting the use of artificial outdoor lighting to basic safety requirements, shielding the lights when possible, and using minimal- impact lighting techniques. The actions proposed in the alternatives could result in new facilities, some of which could necessitate some night- time lighting. However, the effects of this lighting would be localized and minimized by the mitigation techniques described above. Only a small area would be affected by the facilities. It is expected that these few developments would have a negligible impact on the night sky. Therefore, lightscape was dismissed as an impact topic.

Natural or Depletable Resource Requirements and Conservation Potential

None of the alternatives being considered would result in the extraction of resources from the park. Under all of the alternatives ecological principles would be applied to ensure that the park's natural resources were maintained and not impaired.

Energy Requirements and Conservation Potential

The National Park Service would pursue sustainable practices whenever possible in all decisions regarding national park operations, facilities management, and development in Crater Lake National Park. Whenever possible, the Park Service would use energy conservation technologies and renewable energy sources. Consequently, the alternatives would negligibly affect energy consumption compared to current conditions.

Land Use

There are no anticipated conflicts with local land use planning. The proposed management zones and creation of additional recreation and visitor service opportunities in the park as proposed under certain alternatives would not be inconsistent with local land use plans. Potential development of NPS facilities in local communities outside the park would conform with any local land use plans such as the *Klamath County Comprehensive Plan*. None of the alternatives would be expected to induce changes in land use outside the park, and there are no private in holdings within the park.

Environmental Justice

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low- Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low- income populations and communities. No alternative would have health or environmental effects on minorities (including American Indian tribes) or low- income populations or communities as defined in the Environmental Protection Agency's *Environmental Justice Guidance* (1998). Therefore, this impact topic has been dismissed as an impact topic in this document.

Indian Trust Resources

The lands comprising Crater Lake National Park are not held in trust by the secretary of the interior for the benefit of Indians due to their status. Therefore, this topic was dismissed.

Wilderness Resources and Values

The alternatives place all lands within the 1974 wilderness proposal within the backcountry zone and would allow only uses and development compatible with the protection of wilderness characteristics and values. All new development proposed under any of the alternatives would occur within the exclusions, and proposed wilderness lands would be avoided during construction activities. Backcountry opportunities for visitors to experience solitude and unconfined recreation in the backcountry would remain unchanged. Opportunities for primitive recreation, hiking, backpacking and stock use in the wilderness would remain. In most wilderness areas of the park, visitors would continue to find what they perceive as pristine natural conditions. For example, visitors would continue to find a landscape generally untrammeled by people with few signs of disturbance or alteration. Relatively few visitors use the backcountry in the park, and although this number is expected to increase, negligible impacts to backcountry visitor experiences are anticipated under alternative 1 (no-action alternative).